



RESOURCE GUIDE #1

Wildfire – Research, Science & Key Organizations

There is a plethora of wildfire information and resources available. Below is curated information to show where you can learn more about wildfires. The guide includes four sections: (1) national wildfire organizations, (2) California wildfire organizations, (3) community-based wildfire organizations and (4) current key research documents.

SECTION 1: NATIONAL WILDFIRE ORGANIZATIONS

National Fire Protection Association (NFPA)



800.344.3555; www.nfpa.org

The National Fire Protection Association (NFPA) is a global self-funded nonprofit organization, established in 1896, devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. NFPA delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy. NFPA also is the sponsor and manager of the Firewise Communities Program (see *Community Wildfire Preparedness* later in this Guide).

- ✓ [Virtual Workshops](#) provide conference quality, free learning opportunities for wildfire stakeholders, by connecting them with leading researchers and practitioners in a live interactive format. Each session is an hour-long and features a wildfire related topic that closes with questions received directly from participants.

Insurance Institute for Business & Home Safety



803.789.8000; www.ibhs.org/

IBHS is a team of scientists and risk communicators who deliver strategies to build safer and stronger homes and businesses. IBHS is an independent, nonprofit, scientific research and communications organization supported solely by property and casualty insurers and reinsurers that conduct business in the U.S. The IBHS Research Center has a state-of-the-art research facility with a research structure is a specially designed wind tunnel. IBHS is the only lab in the world that can test full-scale one- and two-story residential and commercial buildings in a controlled, repeatable fashion for highly realistic windstorms, wind-driven rain, hailstorms and wildfire ember storms utilizing the unique features below. IBHS has extensive practical [risk research](#) on their site regarding wildfires. Also, IBHS sponsors, DisasterSafety.org, which features projects to help home and business owners protect their property from damage caused by wildfire and other natural disasters.



IBHS Research Center

Headwaters Economics



HEADWATERS ECONOMICS 406.599.7841; www.headwaterseconomics.org

Headwaters Economics (HE) is an independent, nonprofit research group that works to improve community development and land management decisions. Headwaters Economics informs community decision-making and identifies practical solutions by making complex data understandable, beautiful, and interactive, helping develop solutions to some of the most urgent and important issues that communities face. The organization works in partnership with USDA Forest Service, ISHS and others.





- ✓ [Wildfire Risk to Communities](#): *Wildfire Risk to Communities* is a free, easy-to-use website with interactive maps, charts, and resources to help communities understand, explore, and reduce wildfire risk.
- ✓ [Economic Profile System](#): a free, easy-to-use website from Headwaters Economics that provides over a dozen customizable reports about demographics, economies, and land use. The [Wildfire Risk Report](#) is available for all US cities and counties and combines socioeconomic data with nationally available wildfire risk data.
- ✓ [Reduce Risk](#) with one-stop shopping tools, resource, and national programs. Information on home ignition zone, home hardening, land use planning, wildfire preparedness, community health, wildfire prevention, wildfire response, fuel treatments and post-fire recovery.

Community Planning Assistance for Wildfire



406.224.1837; www.cpaw.headwaterseconomics.org

Sponsored by Headwaters Economics, Community Planning Assistance for Wildfire (CPAW) works with communities to reduce wildfire risk. CPAW's team of professional planners, foresters, economists, and risk modelers help communities integrate wildfire mitigation into the development planning process. CPAW services are provided at no cost to the community, and include land use planning recommendations, hazard assessments, custom research, and training.

- ✓ [Land Use Planning](#) -- Provides communities with land use planning recommendations to mitigate wildfire risk through land use codes, plans, and ordinances.
- ✓ [Wildfire Hazard Assessments](#) -- Uses the best available science to model and map wildfire hazard at the neighborhood and community scales.
- ✓ [Capacity Building](#) -- Hosts workshops and trainings to facilitate learning, networking and best practices.
- ✓ [Research & Science](#) -- Provides customized research and tools to help communities better understand wildfire risks and trends.

Fire Adapted Communities Learning Network



www.fireadaptednetwork.org

The Fire Adapted Communities Learning Network connects and supports people and communities who are striving to live more safely with wildfire. The purpose of FAC Net is to be a peer network to exchange information, collaborate to enhance the practice of fire adaptation, and work together and at multiple scales to help communities live safely with fire. They offer a [Fire Adapted Communities Self-Assessment Tool \(FAC SAT\)](#) to help communities assess their level of fire adaptation and track their capacity to live safely with fire over time.

Other National Organizations:

- *National Interagency Fire Center* – Home to the national fire management programs of each federal fire agency, along with partners including the National Association of State Foresters, the U.S. Fire Administration, the National Weather Service and a Department of Defense liaison. Working together, these partners provide leadership, policy oversight and coordination to manage the nation's wildland fire programs. Coordinate fire incident information and research. [www.nifc.gov]
- *International Association of Wildland Firefighters (IAWF)* – Provide lessons learned with wildland firefighters and share research and after action information. [www.iawfonline.org]



SECTION 2: STATE WILDFIRE ORGANIZATIONS

CAL FIRE



www.readyforwildfire.org

Cal Fire, the Department of Forestry and Fire Protection, is responsible for the fire protection and stewardship of over 31 million acres of California's privately-owned wildlands. Cal Fire has excellent public information available on its web site.

Cal FIRE is required to classify the severity of fire hazards in areas of California. The [Fire Hazard Severity Zones](#) are developed using a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Many factors are considered such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather.

Cal Fire designates all State Responsibility Areas (SRA) as moderate, high or very high hazard. Cal Fire maps only very high hazard in Local Responsible Areas (LRAs). Federal Responsible Areas are not mapped by Cal Fire. Urban and wildland areas are treated differently in the model, but the model does recognize the influence of burning embers traveling into urban areas, which is a major cause of fire spread.

Determine the fire hazard in my area? You can enter your address to [locate your property on a Fire Hazard Severity Zone map](#). An [existing statewide map and maps of each county with FHSZ](#) are also posted.

California Fire Science Consortium (CFSC)



www.cafiresci.org/

The California Fire Science Consortium (as part of the Joint Fire Science Program's Fire Science Exchange network) is a network of scientists and managers that strives to accelerate the awareness, understanding, and adoption of wildland fire science information by federal, tribal, state, local, and private stakeholders within ecologically similar regions. Their mission is to be an inclusive, neutral, customer-driven collaborative group that facilitates the flow of fire science information and dialogue. The CFSC is divided into 4 regional teams and one statewide wildland-urban interface team. Statewide coordination is through UC Berkeley. Visit the [Northern California](#) pages for regional fire science resources.

Other State Organizations:

- In California, the UCCE - University of California Cooperative Extension, in each county, is an important resource with many participating in local wildfire initiatives.

SECTION 3: COMMUNITY WILDFIRE PREPAREDNESS ORGANIZATIONS

Community grass roots and neighborhood preparation is a foundational element of wildfire preparedness. Fire adapted communities is a philosophy/strategy. "Fire adapted communities are knowledgeable, engaged communities where actions of residents and agencies in relation to infrastructure, buildings, landscaping and the surrounding ecosystem lessen the need for extensive protection actions and enable the communities to safely accept fire as part of the surrounding landscape. Because every community is unique, the steps and strategies they take to improve their wildfire resilience will vary from place to place." (from Fire Adapted Community website www.fireadapted.org)





There are two primary types of community-based organizations in California focused on residents working together to strengthen the resiliency of their neighborhoods and to create fire adapted communities – Firewise Communities and Fire Safe Councils. These organizations work together routinely.

FIREWISE COMMUNITIES

- National organization
- Tend to be informal neighborhood groups; some may be formal non-profits
- Focus on defensible space and home hardening as means to be more resistant to wildfires
- No direct funding or grant streams
- National certification program and recognition

FIRE SAFE COUNCILS

- California based organization
- Local organizations; may be neighborhood based, larger or county-wide
- Tend to be formal non-profits
- Focus on defensible space, home hardening, emergency planning and evacuations
- California Fire Safe Council provides access to grants from state and federal agencies -- works as a coordinating organization.

FIREWISE COMMUNITIES



www.firewise.org

A national program managed by the National Fire Protection Association that provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level. NFPA has easy steps on how

to [create Firewise communities](#).

CALIFORNIA FIRE SAFE COUNCIL



www.cafiresafecouncil.org

The California Fire Safe Council (CFSC), a California non-profit corporation, was first formed as a project of the California Department of Forestry and Fire

Protection (CAL FIRE) in 1993. Today, CFSC maintains an online, “one-stop shop,” Grant Clearinghouse mainly for the four primary federal agencies: the US Department of Agriculture, Forest Service and the Department of the Interior agencies the Bureau of Land Management, National Park Service, and Fish & Wildlife Service. These agencies provide large master grants to CFSC to conduct, select, manage and monitor subgrants to local community groups such as Fire Safe Councils, homeowner associations, local government, fire departments, and other entities working on wildfire prevention activities such as defensible space, community fire planning, and education. See [map](#) of existing Councils and [Fire Safe Council Handbook](#) for guidance on how to start a local Fire Safe Council.





SECTION 4: CURRENT KEY RESEARCH

Reducing the Vulnerability of Buildings to Wildfire: Vegetation and Landscaping Guidance (UC 2021)

<https://anrcatalog.ucanr.edu/pdf/8695.pdf>



Research shows that a home’s odds of surviving a wildfire can be substantially improved through careful attention to three principles: (1) thoughtful landscape design aimed at reducing and separating combustibles within the defensible space on a property, (2) retrofitting homes to resist wildfire, and (3) implementing ongoing maintenance of the home and landscaping to reduce combustible materials and to address the wear and tear. This publication explains how buildings burn during a wildfire and what actions homeowners can take in advance to increase their home’s odds of survival. *(Authors: Yana Valachovic, Stephen Quarles, Steven Swain)*

Suburban Wildfire Adaptation Roadmaps (IBHS 2020)

<https://ibhs.org/wp-content/uploads/wpmembers/files/ibhs-suburban-wildfire-adaptation-roadmaps.pdf>



IBHS has identified key vulnerabilities for suburban neighborhoods; these insights build on findings published by the fire protection community and the best experimental and field research to date. The Suburban Wildfire Adaptation Roadmaps provide decision trees that show the range of possibilities and what to avoid. When put into action by homeowners, and ultimately whole communities, the risk curve can be bent downward and limit the catastrophic reach of wildfires.

The Suburban Wildfire Adaptation Roadmaps informed the [Wildfire Ready guide](#). The guide provides details about projects homeowners can perform that will reduce their wildfire risk.

Community Destruction During Extreme Fires is a Home Ignition Problem (2020)

<https://wildfiretoday.com/2020/09/21/community-destruction-during-extreme-wildfires-is-a-home-ignition-problem/>



Focus is on how high intensity flames aren’t igniting homes, but embers and low intensity surface fires are. Outlines how we need to shift our mind-set to focusing on “home ignition” solutions versus full fire suppression. *(Authors: Jack Cohen, Dave Strohmaier; Article, Wildfire News & Opinion, 9/21/20)*

Planning the Wildland-Urban Interface - APA (2019)

<https://www.planning.org/publications/report/9174069/>



The report offers planners an in-depth introduction to the WUI and wildfire basics, covering challenges, trends, and historical context along with the latest wildfire science. It then moves to solutions, providing a holistic planning framework and practical guidance on how to address WUI and wildfire challenges in plans, policies, and regulations. And it highlights opportunities for collaboration and case study examples. *(Authors: Molly Mowery, AICP, Anna Read, AICP, Kelly Johnston, Tareq Wafaie, AICP)*

Building a Wildfire-Resistance Home: Codes and Costs (2018)

<https://headwaterseconomics.org/wp-content/uploads/building-costs-codes-report.pdf>



This study finds negligible cost differences between a typical home and a home constructed using wildfire-resistant materials and design features. Decades of research and post-fire assessments have provided clear evidence that building materials and design, coupled with landscaping on the property, are the most important factors influencing home survivability during a wildfire.

(Authors: Headwaters Economics, IBHS, Stephen Quarles, Kelly Pohl) Coming Soon – Similar study for Northern California and Southern California





An Analysis of Wildland-Urban Fire with Implications for Preventing Structure Ignitions (2018)

https://legacy-assets.eenews.net/open_files/assets/2019/01/08/document_gw_02.pdf



Research shows that the characteristics of a structure and its immediate surroundings within 30 meters principally determine structure ignitions – the home ignition zone. The research shifts the focus of the wildland-urban interface (WUI) from controlling inevitable wildfires to a structure ignition problem. *(Author: Jack Cohen, PhD, US Forest Service, retired)*

Land Use Planning to Reduce Wildfire Risk (2016)

https://headwaterseconomics.org/wp-content/uploads/Planning_Lessons_Full_Report_Web.pdf



This report profiles how five cities and counties in the region—including [Austin, Texas](#), [Boulder, Colorado](#), [Flagstaff, Arizona](#), [San Diego, California](#), and [Santa Fe, New Mexico](#) —are adapting to the increasing risks of wildfires through improved land use planning. While each case study demonstrates a unique approach toward wildfire mitigation, together they represent a suite of land use planning strategies ([Summary Table](#)) that can be selectively applied elsewhere. *(Author: Headwaters Economics, Ray Rasker, Kimiko Barrett)*

Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations (2010)

<https://anrcatalog.ucanr.edu/pdf/8393.pdf>



A wildfire-safe home must be ember ignition-resistance. A combination of near-home vegetation management, appropriate building materials, and related design features must all be used as a system to help a home survive a wildfire. Practical science-based recommendations on roof covering and roof edge, eaves and overhangs, windows, decks, exterior siding, plus fire-retardant treatments and coatings. *(Authors: Stephen Quarles, Yana Yalachovic, Gary Nakamura, Glenn Nader, Michael de Lasaux)*

Association of Bay Area Governments: September 2021

This Resource Guide was built from information on agency's web sites and other resource information.

Version 1

